

CASE REPORT

Versatility of the free jejunum flap in vaginal reconstruction

Giovanni Bistoni¹, Reza Alamouti², Sonia Martinez Alcaide³, Luis Javier Matute Tobias⁴, Francisco Javier Blanco Gonzalez³ & José Mallent Añon¹

¹Plastic Surgery Unit, Hospital de la Ribera, Ctra. Km 1, 46600 Alzira, Spain

²Department of Plastic and Reconstructive Surgery, Royal London Hospital, London, UK

³General Surgery Unit, Hospital de la Ribera, Ctra. Km 1, 46600 Alzira, Spain

⁴Gynecology Unit, Hospital de la Ribera, Ctra. Km 1, 46600 Alzira, Spain

Correspondence

Giovanni Bistoni, Plastic Surgery Unit, Hospital de la Ribera, Ctra. Km 1, 46600 Alzira, Spain. Tel: (0034) 671 419197; Fax: 0034-962458264; E-mail: g.bistoni@gmail.com

Funding Information

No sources of funding were declared for this study.

Received: 21 August 2015; Revised: 24

October 2015; Accepted: 3 December 2015

Clinical Case Reports 2016; 4(3): 240–243

doi: 10.1002/ccr3.480

Key Clinical Message

Vaginal reconstruction represents a very difficult challenge. Free jejunal flaps can be easily molded and adapted to solve complex cases restoring the width, length, and consistency of the “new” vagina without compromising the external genitalia and improving the lubrication while preserving sensation to clitoris.

Keywords

Free flap, intestinal interposition, jejunum flap, laparotomy scar, vagina reconstruction, vaginal fibrosis, vaginal stricture.

Introduction

Vaginal reconstruction due to agenesis, trauma, or after surgical exenteration, has undergone significant evolution since the introduction of split thickness skin graft to cover the vagina canal by Abbe in 19th century [1]. The ideal reconstructive procedure should be reliable and provide normal function with no subsequent needs for dilatation. Variety of procedures and techniques have been performed to achieve the mentioned goals including using different parts of gastrointestinal tract as either a graft, pedicle flap or free flap [2, 3].

We describe our case, a 55-year-old lady, who was referred to us with a narrow vagina caused by a progressive fibrosis of unknown origin over 2 years which affected her relationship. Given the physical and psychological effects on the patient and after ruling out malignancy, decision has been made in multidisciplinary meeting (MDT) to reconstruct the vagina. Hence, we decided to create the neovagina with a free jejunum flap in view to enlarge the canal, improve

the lubrication along with preservation of sensation to clitoris.

Case History

A 55-year-old lady referred to our unit from gynecology department with a progressive vaginal fibrosis over 2 years. Examination revealed a fibrotic vagina measuring 1 cm wide and 2 cm deep. Imaging was inconclusive and histology revealed epithelial atrophy, chronic inflammatory infiltrates, and intense focal submucosal edema with no evidence of malignancy. Vaginal wall thickness reduced from 4.4 to 2.7 mm in further biopsies without showing any change in the cervix or parametrium. Cervical biopsy and endocervical curettage indicated reactive benign cellular changes associated with atrophy. Storage disease was then ruled out by measuring relevant immunoglobulins and antibodies in the blood. After considering all findings and patients complaint, we decided to perform the reconstruction without visible scars around perineal and thighs (Fig. 1).

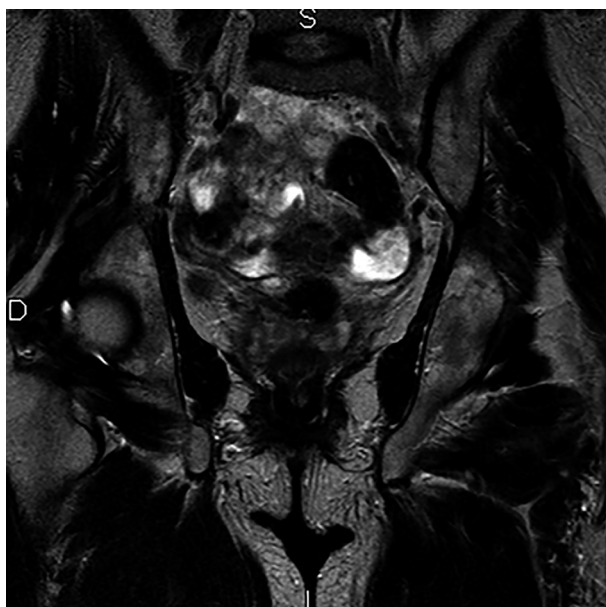


Figure 1. MRI T2WI in the sagittal plane after intravaginal gel administration depicts a lack of vaginal distention, and an abnormal homogenous diffuse high signal intensity in the vaginal walls, secondary to vaginal stenosis and fibrosis.

Surgical technique

Operative procedure was performed in lithotomy position under general anesthesia. Our approach to abdomen was through the midline infraumbilical laparotomy incision from the previous cesarean section. The cesarean was done 20 years before, most probably for fetal distress. That median incision was the approach of choice for a more rapid fetal extraction in those years. We noticed an intense fibrosis of the uterosacral and parametrial ligaments as well as an atrophic uterus. After performing total hysterectomy and double adnexectomy, the fibrotic vagina wall resected via vaginal approach. Hysterectomy and bilateral oophorectomy was performed because they precluded the completion of correct cervical cancer screening, due to stenosis of the introitus, to the vaginal fibrosis and to the obliteration and fusion of the vaginal sack with the cervix.

A jejunum segment of 15 cm long was dissected via midline laparotomy incision. Segment was approximately 70 cm from the Treitz ligament supplied by the third branch of the superior mesenteric artery. After transferring the segment to the pelvis, microsurgical anastomosis performed to the right inferior epigastric vessels and satisfactory flow was confirmed with an intraoperative Doppler (Fig. 2). Inferior part of the jejunum sutured to the remnant of the vagina without tension with 3.0 braided sutures and then, the posterior wall of the vagina was created with the flap (Fig. 3).



Figure 2. Flap molded as desired right after anastomosis to the deep inferior epigastric artery and vein and before inseting to reconstruct the new vagina.



Figure 3. Schematic drawing of the flap inset. Notice the particular design of the flap which allowed us to reconstruct the posterior wall of the vagina and at the same time\nelongate it.

Urethral function tested by measuring the diuresis and vessel integrity with methylene blue. Finally, surgical wound was closed over a drain and patient was transferred to the recovery with a dilator *in situ* which was kept for 2 weeks.



Figure 4. CT in the sagittal plane after administration of iodinated contrast medium in the neovagina shows the size, shape, location, and intestinal pattern of the walls, as well as the excellent distention. The study confirms the absence of contrast leaks in the stump.

Recovery period

Patient was discharged on day 15 with a satisfactory Computed Tomography Scan (CT-scan). She was reviewed in the clinic 2 months postoperatively with an aesthetically acceptable vagina measuring 4 cm in width and 14.5 cm in length (Fig. 4). She started her sexual intercourse 3 months postoperatively and by the fourth month, secretions lessened significantly.

Discussion

Vaginal reconstruction is a complex and controversial process as it affects individuals both physically and psychologically. Most frequent indication is congenital agenesis followed by neoplasm, stenosis due to radiotherapy or transsexuality problems [4, 5]. Although a wide spectrum of surgical and nonsurgical techniques being performed, from a simple graft to regional and free flaps [6], many patients present with postoperative complications such as hypertrophic or unsightly scars, absent or excess of lubrication, receding grafts, and stenosis [7, 8].

Nonsurgical techniques like “Frank” are based on progressive introitus dilatation without satisfactory results [6]. McIndoe procedure may offer good result few months postoperatively, but dyspareunia and scarring can be the limiting factors, on the other hand, different types of regional flaps mainly based on perforators of internal

pubdental artery can restore shape, volume, and function of the vagina, but lacks lubrication [5, 9]. Amniotic graft can mimic characteristics of the vagina, however, fistula formation, stenosis, inadequate length, and poor lubrication can complicate the postoperative period [10, 11].

Baldwin introduced intestinal interposition, subsequently pedicled and free gastrointestinal segments such as jejunum, cecum, and colon have been employed for the reconstruction. The advantages of using intestinal segments are lowering the risk of stenosis, no molds required to ensure permeability, resistant to repetitive trauma, present natural lubrication, and prevent dyspareunia [12].

On the contrary, the presence of two surgical teams and lengthy procedure are the two limiting factors, and potential donor site morbidities can also be debilitating [13]. The other postoperative concern is hypersecretion which progressively diminishes, thus patients can usually resume their sexual relationship after 3 months [14].

Conclusion

Numerous techniques have been described in vaginal reconstruction. Vaginal fibrosis is an uncommon condition and treatment should be tailored according to the individual’s complaint. Gastrointestinal (GI) tract flaps can be ideal as they enlarge and lengthen the vagina, provided natural lubrication, and maintain sensitivity.

Conflicts of interest

None declared.

Ethical approval

Not required.

References

1. Dobroński, P., M. Czaplicki, and A. Borkowski. 2004. History of vaginal reconstruction. *Ginek. Pol.* 75: 65–75.
2. Hensle, T. W., and D. T. Chang. 1999. Vaginal reconstruction. *Urol. Clin. North Am.* 26:39–47.
3. Ozkan, O., M. E. Akar, A. Mesci, and T. Colak. 2008. Microvascular augmented pedicled jejunum transfer for vaginal reconstruction using a laparoscopy-assisted technique. *Microsurgery* 28:671–675.
4. Thomas, J. C., and J. Brock. 2007. Vaginal substitution: attempts to create the ideal replacement. *J. Urol.* 178:1855–9.
5. Murat, E., S. M. Gültan, A. Gökhan, A. İlker, and Y. Erdem. 1996. Vaginal reconstruction with free jejunal flap. *Ann. Plast. Surg.* 36:316–20.

6. V. G. Creación de neovagina con técnica de McIndoe. Método ideal para pacientes con agenesia vaginal que inician su actividad sexual. Caso clínico y revisión de la literatura 2012.
7. Chen, H. C., J. S. Chana, and G. M. Feng. 2003. A new method for vaginal reconstruction using a pedicled jejunal flap. *Ann. Plast. Surg.* 51:429–431.
8. Sánchez, C. J., R. I. Pasos, J. C. Mancera, and V. L. E. Hernández. 2006. Corrección quirúrgica de la agenesia vaginal. *Ginecol. Obstet. Mex.* 74:37–47.
9. Wang, T. N., T. Whetzel, S. J. Mathes, L. O. Vasconez et al. 1987. A fasciocutaneous flap for vaginal and perineal reconstruction. *Plast. Reconstr. Surg.* 60:95–103.
10. Bleggi-Torres, L. F., B. Werner, and M. J. Piazza. 1997. Ultrastructural study of the neovagina following the utilization of human amniotic membrane for treatment of congenital absence of the vagina. *Braz. J. Med. Biol. Res.* 30:861–864.
11. Hashimoto, I., Y. Abe, and H. Nakanishi. 2014. The internal pudendal artery perforator flap: free-style pedicle perforator flaps for vulva, vagina, and buttock reconstruction. *Plast. Reconstr. Surg.* 133:924–933.
12. Ferrari, J. P., A. F. Hemphill, J. Xu, and R. A. DeJesus. 2013. Modified rotational bowel vaginoplasty after total pelvic exenteration. *Ann. Plast. Surg.* 70:335–336.
13. Chen, S. H., E. K. Yeong, Y. B. Tang, and H. C. Chen. 2012. Free and pedicled appendix transfer for various reconstructive procedures. *Ann. Plast. Surg.* 69:602–606.
14. Ozkan, O., M. E. Akar, T. Colak, N. Kayacan, and O. Taskin. 2010. The use of vascularized jejunum flap for vaginal reconstruction: clinical experience and results in 22 patients. *Microsurgery* 30:125–131.